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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/749,541	12/28/2000	Katsuhiko Maeda	201377US3	5976

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EXAMINER	
PHAM, HAI CHI	

ART UNIT	PAPER NUMBER
2861	

DATE MAILED: 05/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/749,541	Applicant(s) MAEDA, KATSUHIKO	
	Examiner Hai C Pham	Art Unit 2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 March 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *15-37,39,41,42,45-79,81-83 and 85-102* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *15-35,39,41,42,45-58,63-65,67-77,79,81-83,85,90,95 and 100* is/are allowed.

6)☒ Claim(s) *36,37,59,61,62,66,78,86,88,89,91,93,94,96,98,99,101 and 102* is/are rejected.

7)☒ Claim(s) *60,87,92 and 97* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 36-37, 59, 61-62, 66, 78, 86, 88-89, 91, 93-94, 96, 98-99, 101-102 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Acknowledged Prior Art (hereinafter AAPA) in view of Kanai et al. (U.S. 5,450,211).

With regard to claims 36, 66, 78, `AAPA discloses that a plastic lens used as a scanning lens in an image forming apparatus changes it shape and refractive index responsive to a change in the ambient temperature, that the temperature-induced change also introduces an error of magnification in the main scanning direction, resulting in a low quality image, and that the correction of the magnification error of the light beam in the main scanning direction is known to change the prescribed write clock frequency and the prescribed rotation number to prescribed number according to the change of the temperature.

However, AAPA does not explicitly teach the temperature detecting device for detecting the temperature of the scanning lens such the correction of the magnification error would directly made based on the detected temperature, and the prescribe reference table.

Regardless, Kanai et al. discloses an image forming apparatus and method in which the magnification error in the main scanning direction is corrected by using a temperature sensor (28) for sensing the temperature around the f-θ lenses (16 and 17) (col. 10, lines 22-68), and the correction being made by changing the write frequency of the laser diode (via frequency divider). Kanai et al. also discloses a developing unit (33) for visualizing an image formed on the image carrier, and the reference table being provided by the ROM (103) where the changes of the temperature and correction data are stored.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to include the temperature detecting device for detecting the temperature of the scanning lens, the visualizing device and the reference table as taught by Kanai et al. in the device of AAPA. The motivation for doing so would have been to suppress the magnification error of the light beam in the main scanning direction as it is related to the origin of the cause.

With regard to claims 59, 86, 88, 91, 93, 96, 98, 101, AAPA discloses a conventional image forming apparatus having a single or a plurality of light beams, including a magnification correcting device for correcting the magnification error by changing the prescribed write clock frequency and the prescribed rotation number to prescribed levels based on a result of comparison between the time difference signal and the reference time difference signal by a comparing device, and the time difference being determined without lowering a light beam deflection speed if the image formation

is in progress (there is no change of the rotational speed of the polygon mirror during the image forming operation as well as during the time difference determination).

However, AAPA fails to teach the time difference being compared with a first reference time to recognize the magnification error, the magnification error correction being performed during an interval of sheets fed to the image carrier, and the visualizing device.

However, Kanai et al. discloses the magnification error correction based on the determination of the time difference as detected by the photosensors (21 and 22), and the correction of the magnification being made possible by a data reference method where data of the standard time is stored in the ROM (103). Kanai et al. also discloses a developing unit (33) for visualizing an image formed on the image carrier. Kanai et al. further teaches the magnification error correction being performed in the interdocument period (before the start of a new printing page).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the reference table storing the previously measured data as taught by Kanai et al. The motivation for doing so would have been to provide a reliable, accurate, and consistent correction of the magnification error made possible by the use of the reference table.

Allowable Subject Matter

3. Claims 15-35, 39, 41-42, 45-58, 63-65, 67-77, 79, 81-83, 85, 90, 95, 100 are allowed.

4. Claims 60, 87, 92, 97 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is an examiner's statement of reasons for allowance: the primary reason for the indication of the allowability of the claimed invention is the inclusion of the limitation, in the combination as currently claimed, that the magnification error correction corrects the magnification error in an image forming apparatus by changing the prescribed write clock frequency and the prescribed rotation number to prescribed levels based on a result of comparison between the time difference signal and the reference time difference signal by a comparing device, and wherein the time difference determines a time difference by counting clock pulses after lowering a light beam deflection speed of the light beam deflecting device to a prescribed speed (with respect to respective base claims 15, 16, 53, 54, 64, 65, 68, 69), wherein the prescribed rotation number is changed to a substantially smallest level as color deviation does not occur in the sub-scanning direction (with respect to respective base claims 39, 67, 79), wherein the new sheet feed is stopped when a time difference is different from a reference time difference, and wherein he magnification errors are then corrected (with respect to respective base claims 63, 90, 95, 100). The combined limitations are not found taught or fairly suggested by the prior arts made of record, considered alone or in combination.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

6. Applicant's arguments filed 03/20/03 have been fully considered but they are not persuasive.

7. With regard to Applicant's argument concerning Kanai et al. only disclosing the temperature around the fθ lenses, but not the exact temperature of the fθ lenses, the examiner respectfully disagrees. Kanai et al. teaches the magnification error correction of the light beam in the main direction by adjusting the write clock frequency of the light beam according to the measured temperature of the fθ lenses since the magnification error is directly caused by the change of the optical characteristics of the fθ lenses due to the specific temperature change around the fθ lenses (versus the ambient temperature of the optical box), such detected temperature is necessary the most intimate temperature of the fθ lenses.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C Pham whose telephone number is (703) 308-1281. The examiner can normally be reached on T-F (8:30-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin R. Fuller can be reached on (703) 308-0079. The fax phone

numbers for the organization where this application or proceeding is assigned are (703) 308-7722, (703) 308-7724, (703) 308-7382, (703) 305-3431, (703) 305-3432 for regular communications and for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Hai Pham

HAI PHAM
PRIMARY EXAMINER

May 21, 2003